

REMARKS

Reconsideration of the above-identified patent application, as amended, is respectfully requested. The present amendment is responsive to the Office Action mailed February 6, 2003. A petition for an extension of time in which to respond to the Office Action accompanies this amendment.

Support For New Claims

Claim 14

New independent claim 14 is based upon a combination of canceled original claims 1, 3, 5 and 6. Fig. 1 illustrates a columnar structural member 1, flange 2, U-shaped reinforcing ribs 3, where the end 4 of the reinforcing ribs 3 opposite to the flange 2 is gradually bent. Fig. 2 illustrates an embodiment with base plate 5. Fig. 7 illustrates an embodiment with V-shaped reinforcing ribs 3.

Claim 15

New dependent claim 15 corresponds to original dependent claim 2.

Claim 16

New dependent claim 16 corresponds to original dependent claim 4.

Claims 17 and 18

New dependent claims 17 and 18 correspond to original dependent claims 7 and 8.

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New matter is not being presented by the present amendment.

Drawings

Fig. 22 of the drawings was objected to because it should designated by a legend such as --Prior Art--.

OK RF
10/17/03
Attached hereto is a proposed corrected Fig. 22 which is marked in red with the legend --Prior Art--.

Upon approval of proposed corrected Fig. 22 by the Examiner and allowance of the application, a correct Fig. 22 will be submitted.

In view of the proposed correction to Fig. 22, it is respectfully requested that the objection to the drawings be withdrawn.

Claim Objections

Claim 2 was objected to because of various informalities.

By the present amendment, claim 2 has been canceled and replaced with new claim 15 rewritten taking into account the comments of the Office Action.

In view of the present amendment, it is respectfully requested that the claim objections be withdrawn.

§112, ¶2

Claim 5 was rejected under 35 U.S.C. §112, second paragraph, as being indefinite.

By the present amendment, claim 5 has been canceled.

In view of the present amendment, it is respectfully requested that the rejection under 35 U.S.C. §112, second paragraph, be withdrawn.

§102/§103

Claims 1 to 8 were rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,481,835 to Boom. It is believed that claims 1-3, 5 and 10-13 were rejected over Boom. A Preliminary Amendment filed February 25, 2002 canceled claims 4 and 6 to 8 and replaced them with claims 10-13 to eliminate multiple dependent claims. The Office Action Summary under Disposition of Claims recognizes claims 1-3, 5 and 9-13 were pending on the application prior to the present amendment.

Claims 1-8 were rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 3,811,785 to Hagglund. Again, it is believed claims 1, 3, 5 and 10-13 were rejected over Hagglund.

The rejection of claims 14 to 18 of the present amendment over Bloom and/or Hagglund is respectfully traversed.

Claim 9 was rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,979,130 to Gregg in view of U.S. Patent No. 5,626,534 to Cook.

By the present amendment, claim 9 has been canceled and it has not been replaced with a corresponding claim.

Therefore, the rejection of claim 9 over Gregg in view of Cook is now moot.

Patentability

Bloom

The Bloom Patent is directed to a joint between a highway luminaire support pole and a base plate in order to save the lives of persons in a vehicle by making a luminaire support pole separate from a base plate in the event of a collision by the vehicle. On the other hand, the present invention is directed to a joint between a columnar structural member and a base plate or a coupling flange in order to mitigate stress concentration and thus prevent fatigue fracture by using tabular members bent into the shape of U or V as reinforcing ribs. A structure wherein a column is stood on a base plate is common to both the Bloom Patent and the present invention. However, the present invention is different from the Bloom Patent in the joint strength among a base plate, columnar structure and reinforcing ribs, the concept thereof, the shapes of the base plate and the reinforcing ribs, and the method of joining the base plate and the reinforcing ribs.

A base plate (480) shown in the Bloom Patent is denominated as lower-base spokes since it has spokes protruding radially from the center rather than as a round shape. The base plate (lower-base spokes, 480) must be joined firmly to a foundation using anchor bolts (425) because the base plate has to support a luminaire support pole (430). On the contrary, the joint between the base plate and reinforcing ribs (upper-base spokes, 490) must be

disconnected in response to a certain degree of impact. Therefore, in the Bloom Patent, each spoke of the base plate (lower-base spokes, 480) forms a U-shape in a cross section and has rims at both the upper ends thereof so that the above functions of connection and disconnection may be easily secured.

Further, reinforcing ribs (490) in the Bloom Patent and denominated as upper-base spokes since they face a base plate (lower-base spokes, 480) and protrude radially from the center similarly to the base plate (lower-base spokes, 480). The reinforcing ribs (upper-base spokes, 490) are in a pair and each of the reinforcing ribs has a rim so as to join with each of the two upper rims (450) integrated in each spoke of the base plate (lower-base spokes, 480). However, except for the above, the reinforcing ribs (upper-base spokes, 490) are typical tabular reinforcing reinforcing ribs from the viewpoint that they protrude radially from the center of a luminaire support pole and other viewpoints. In other words, the reinforcing ribs (upper-base spokes, 490) are nothing but prior art cited in the present application.

On the other hand, a base plate (5) in the present invention is a fixed flat plate but is not particularly assumed to be of any shape. Therefore, the Bloom Patent has nothing to do with the present invention whatever bent shape a base plate of the Bloom Patent has.

A feature of the present invention lies in the shape of reinforcing ribs (3). Each reinforcing rib (3)

according to the present invention is a tabular member that is gradually bent into the shape of U or V at the end (4) opposite to the base plate (5). The bend creates a low rigidity portion at the bent portion. By so doing, stress concentration that would have been generated in a reinforcing rib (12) (Fig. 22) previously in use, is largely mitigated at the upper end (4) of a bent reinforcing rib (3) of the present invention. Thus a joining structure having a high fatigue strength can be obtained by the present invention. It is a matter of course that a pair of parts parallel with each other is formed in a tabular reinforcing rib (3) when the tabular reinforcing rib (3) is bent into the shape of U. However, a point of the present invention is that the upper end (4) of a reinforcing rib (3) is bent and the parallel parts thereof are integrated into a piece. A pair of reinforcing ribs (upper-base spokes, 490) according to the Bloom Patent is composed of two tabular plates separated from each other and stress concentrates on the tip portion farthest from a lower-base section (410) and fatigue fracture occurs there. The stress concentration in Bloom is not mitigated beyond the effect of increasing the number of reinforcing ribs (upper-base spokes, 490) because the reinforcing ribs are attached as a pair.

Further distinctions between the Bloom Patent and the present invention as follows.

Claim 14

The Office Action takes the position that Bloom shows a joining structure 410 having one or more tabular members 480 protruding from the surface of a structural member, [comprising] bending one or both ends 450 of each tabular member 480 (see Figure 2c; column 5 lines 5-15).

However, the applicants maintain that the tabular members (480) cited in the Bloom Patent are not reinforcing ribs but are the ones that correspond to a base plate cited in the Invention. The present invention is a joining structure wherein reinforcing ribs are bent in the shape of U or V and joined, and the shape of a base plate is not particularly specified in the present invention. Therefore, the present invention is quite different from the technology disclosed or suggested in the Bloom Patent.

The Office Action takes the position that Bloom shows each tabular member 480 bent into the shape of a U (figure 2c).

The applicants maintain that it is beyond doubt that both reinforcing ribs (3) in the present invention and tabular members (480) in the Bloom Patent have U-shape in their cross sections. However, the tabular members (480) in the Bloom Patent are the ones that correspond to a base plate, but the reinforcing ribs (3) in the present invention are literally reinforcing ribs. From this fact, it can be said that the Bloom Patent is different from the present invention.

In addition, the present invention and the Bloom Patent are significantly different from each other in the following items.

Tabular members (480) in the Bloom Patent are the members that make use of the bent rims and are joined firmly with a foundation by piercing holes in the bent rims and tightening anchor bolts (425) through the holes. On the other hand, reinforcing ribs in the present invention are the members that are provided with low rigidity portions formed by bending the portions where stress concentration is likely to occur, and by so doing mitigate the stress concentration and enhance fatigue strength. Therefore, in consideration of the difference between the present invention and the Bloom Patent in structural objects and functions, it can be said that the one has nothing to do with the other.

The Office Action takes the position that Bloom further shows the structural member having a coupling flange or base plate 440, 490, and said tabular members 450 disposed between the structural member and the coupling flange or base plate 440, 490 (figure 2c).

However, the applicants maintain that according to the Bloom Patent, reinforcing ribs (upper-base spokes, 490) the lower ends (440) of which are bent are joined with a columnar structural member (430). The reinforcing ribs (upper-base spokes, 490) protrude radially from the center of the columnar structural member, and they correspond to neither a base plate nor coupling flanges. Though the lower ends (440) of reinforcing ribs are bent in the direction

perpendicular to the direction of the axis of the columnar structural member, they are neither flanges nor a base plate and are nothing but ribs for joining with tabular members (450). The reinforcing ribs (upper-base spokes, 490) are the same as the reinforcing except that the lower ends of the former are bent. The reinforcing ribs (upper-base spokes, 490) of the Bloom Patent, as the ends thereof far from flanges are not bent, do not have the function of mitigating stress concentration and are entirely different from those of the present invention.

In addition, tabular members (450) neither join nor reinforce reinforcing ribs (upper-base spokes, 490) and the lower end rims (440) thereof. Therefore, no members that correspond to the tabular members (450) in the Bloom Patent are included in the members incorporated in a joining structure of the present invention. From this fact, there is nothing in the Bloom Patent that suggests the present invention.

Claim 15

The Office Action takes the position that Bloom further shows each tabular member 480 extends in the direction of the principal stress of the structural member and protruding in the shape of [a] T; and one or both ends 450 of each reinforcing rib 480 are bent in a direction deviating from the direction of said principal stress (figure 2c).

However, the applicants maintain that tabular members (480) cited in the Bloom Patent are not reinforcing

ribs but they are the ones that are transformed from a round shape and correspond to a base plate cited in the present invention. This is cited as the expression "The lower-base section 410 is radially-spoked in shape instead of round". It is quite apparent that tabular members (480) correspond to a base plate. On the other hand, the present invention is a joining structure characterized in that the end of a reinforcing rib is bent, and the shape of a base plate is not the subject of the present invention. Therefore, the Bloom Patent is quite different from the present invention whatever the shape of a member corresponding to a base plate is referred to in the Bloom Patent.

Claim 16

The Office Action takes the position that Bloom shows both ends 450 of each tabular member 480 bent to a right angle to the direction of the principal stress (figure 2c).

The applicants submit that both the ends (450) of each tabular member (480) in the Bloom Patent are bent to a right angle and also each reinforcing rib in the present invention is bent certainly up to the direction perpendicular to the direction of principal stress at the center of the reinforcing rib. However, tabular members (480) in the Bloom Patent only correspond to a base plate in the present invention and, even from this fact, it can be said that the Bloom Patent is quite different from the present invention.

The object of the Bloom Patent in bending both the ends (450) of each tabular member (480) is to form rims used for joining with the lower ends (440) of a pair of the reinforcing ribs (upper-base spokes, 490). On the other hand, the object of the present invention in bending the end (4) of each reinforcing rib (3) is to mitigate stress concentration. Therefore, the object of the present invention is entirely different from that of the Bloom Patent.

Claim 18

The Office Action takes the position that Bloom further shows a tabular member 480 serving as a fixture for a secondary member 460 (figure 2c).

However, the applicants maintain that member (460) are interpreted as secondary members or members for attaching joints. However, the present invention clearly limit to the claims, as amended, that tabular members join a columnar structure with a base plate or a flange. Therefore, tabular members, defined in the amended claim, are the ones used for attaching secondary members or joints.

It is therefore submitted that new independent claim 14, and claims 15 to 18 dependent thereon, are patentable over Bloom.

Hagglund

Regarding USP 3811785 to Hagglund, the present invention is limited to a joining structure comprising a columnar structure, a base plate or a flange, and reinforcing, as amended. Therefore, the Hagglund patent

that represents a joint between tubes is very different from the present invention.

It is therefore submitted that new independent claim 14, and claims 15 to 18 dependent thereon, are patentable over Hagglund.

Gregg & Cook

Claim 9 was rejected over Gregg in view of Cook. By the present amendment, claim 9 has been canceled and there is no new claim corresponding to claim 9. Therefore, the rejection over Gregg and Cook is now moot.

CONCLUSION

It is submitted that in view of the present amendment and foregoing remarks, the application is now condition for allowance. It is therefore respectfully requested that the application, as amended, be allowed and passed to issue.

Respectfully submitted,

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